

# CRS Issue Brief for Congress

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## Army Corps of Engineers Civil Works Program: Issues for the 109<sup>th</sup> Congress

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## Army Corps of Engineers Civil Works Program: Issues for the 109<sup>th</sup> Congress

### SUMMARY

The 109<sup>th</sup> Congress is considering authorization, appropriations, and oversight issues related to the civil works program of the U.S. Army Corps of Engineers. The Corps plans, constructs, and operates water resources facilities primarily for flood control, navigation, and environmental purposes.

**Appropriations.** Once Corps activities are authorized, the appropriations process plays a significant role in their realization. The Energy and Water Development appropriations bill for FY2006 approved by the House, H.R. 2419, includes \$4.746 billion for the Corps' FY2006 civil works budget, which is \$414 million more than requested and \$294 million less than the \$5.040 billion enacted for FY2005. Concerns over Corps financial management (e.g., the frequency of reprogramming across projects, and the use of multi-year continuing contacts) are shaping the consideration of the agency's budget.

**Authorizations and WRDA.** Congress typically authorizes Corps projects and policy changes in a Water Resources Development Act (WRDA); introduction of a WRDA bill has loosely followed a biennial schedule. The last enacted WRDA was in 2000. Authorization of a few controversial projects and possible changes to Corps regulations and practices are shaping the consideration of WRDA 2005, S. 728. The bill has been placed on the Senate Calendar.

**Project Development Reform.** WRDA bills and other proposed legislation in recent Congresses contained provisions to change how the Corps formulates, reviews, and implements projects, but no significant changes have been enacted. S. 728 contains some changes. These provisions are fueling dis-

agreement about the appropriate direction of any changes to Corps practices.

**Agency Management.** In 2004, the Corps released a civil works strategic plan for FY2004 through FY2009. The Corps currently is developing a comprehensive five-year budget plan for future spending.

**Ecosystem Restoration.** During the last decade, Congress has expanded Corps involvement in environmental and ecosystem restoration, but concerns persist about its role. Authorization of more restoration efforts, such as efforts in coastal Louisiana and the Upper Mississippi River System, are included in S. 728. Authorization of additional features of the Florida Everglades restoration effort and oversight over the Corps' implementation of the effort are also possible.

**River Management.** Drought, concerns over threatened and endangered species, and interest in non-structural flood control have raised questions about river management practices. Questions include whether some uses should take precedence over others and how uncertainty is addressed in decision-making. One of the more contentious river management issues for the Corps has been balancing the multiple uses — navigation, recreation, species habitat, water supply, power generation, and more — of the Missouri River.

Another active river issue is S. 728's authorization of navigation improvements on the Upper Mississippi River-Illinois Waterway (UMR-IWW). Whether to link the authorization and funding for navigation improvements to ecosystem restoration investments is part of the ongoing UMR-IWW debate.

## MOST RECENT DEVELOPMENTS

The Energy and Water Development appropriations bill for FY2006 approved by the House, H.R. 2419, includes \$4.746 billion for the Corps' FY2006 civil works budget, which is \$414 million more than requested and \$294 million less than the \$5.040 billion (including \$372.4 million in supplemental appropriations) enacted for FY2005. Two House committees and one Senate committee have held hearings on the FY2006 Corps budget.

S. 728 — Water Resources Development Act (WRDA) of 2005 — was reported and placed on the Senate calendar on April 26, 2005. Floor consideration is being largely shaped by debate over provisions changing Corps regulations and practices and a few authorizations (e.g., authorizations of investments for the Upper Mississippi River-Illinois Waterway, Coastal Louisiana, and the Florida Everglades). For more information on WRDA 2005, see CRS Issue Brief IB10133, *Water Resources Development Act (WRDA): Army Corps of Engineers Authorization Issues in the 109<sup>th</sup> Congress*, coordinated by Nicole T. Carter. The House Transportation and Infrastructure Subcommittee on Water Resources and the Environment has expressed interest in moving a WRDA bill in 2005 held a hearing on projects for inclusion in a prospective WRDA.

Because of a continuing drought in the Missouri River basin, the Corps estimates that it will shorten the 2005 navigation season in the lower basin by ending the season 61 days early. The reservoirs in the upper basin are at historic lows; the Corps is working on temporary emergency measures with some communities, including Native American communities, whose water supplies are threatened by the low lake and channel water levels.

## BACKGROUND AND ANALYSIS

The Corps is a federal agency, located in the Department of Defense, with military and civilian responsibilities; it is staffed predominantly by civilians. Through its military program, the Corps provides engineering, construction, and environmental management services to the Army, Air Force, federal agencies, and foreign governments. This report, however, focuses on issues related to the Corps civil works program, through which the Corps plans, builds, operates, and maintains a wide range of water resources facilities at the direction of Congress. The agency also has regulatory responsibilities for navigable waters.

The Corps' oldest civil responsibilities are creating navigable channels and controlling floods. During the last decade, Congress has increased the agency's responsibilities in the areas of ecosystem restoration, environmental infrastructure,<sup>1</sup> and other non-traditional

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<sup>1</sup> *Environmental infrastructure* refers to Corps projects focused on municipal water supply and wastewater treatment facilities or surface water resource protection and development. Before 1992, the Corps generally had not been involved with these types of projects; it historically has been involved in water supply only as part of multipurpose projects. Since 1992, Congress has authorized more than 220 environmental infrastructure projects. However, only a few of these have received funding. The Administration's FY2006 and the FY2005 budgets requested no funds for environmental infrastructure projects. For FY2005, however, Congress provided an estimated \$44 (continued...)

activities, such as disaster relief and remediation of formerly used nuclear sites. The economic and environmental impacts of Corps projects can be significant, and at times are quite controversial.

**Appropriations.** The Corps civil works budget primarily funds the planning, construction, and maintenance of site-specific projects; appropriations generally are made as part of the Energy and Water Development appropriations acts. H.R. 2419 includes \$4.746 billion for the Corps' FY2006 civil works budget, which is \$414 million more than requested and \$294 million less than the \$5.040 billion (including \$372.4 million in supplemental appropriations) enacted for FY2005.

Language in H.R. 2419 would change the Corps' ability to reprogram funds across projects and to use multi-year continuing contracts. For example, it would restrict the Corps' ability to increase or decrease the funding for a project to no more than \$2 million or 10% of that year's appropriation, whichever is less. The accompanying report, H.Rept. 109-86, for the most part adopts the "no new starts" of the President's FY2006 request; however, not all of the President's priority projects receive the full amount requested and some appropriations were added to some ongoing construction projects. The report also noted that the House Appropriations Committee "supports the concept of focusing limited resources on completing high-value projects already under construction, and the Committee recommendation is based in large part on the Administration's performance-based approach."

The Corps plays a significant coordination role in the restoration of the Central and Southern Florida ecosystem. The President's request for FY2006 includes \$137 million for the Corps' construction projects in the region. The \$137 million would fund Everglades activities that were previously budgeted separately — the Central and Southern Florida Project, the Kissimmee River Restoration Project, and the Everglades and South Florida Restoration Projects — and the Modified Water Deliveries Project (\$35 million in Corps appropriations for FY2006). The funds for the Modified Water Deliveries project in H.Rept.109-86 followed the President's request for changing the appropriations for the project to no longer be paid solely through Department of Interior appropriations. For more information on Corps' appropriations generally and Everglades appropriations specifically, see CRS Report RL32307, *Appropriations for FY2005: Energy and Water Development*, and CRS Report RL32852, *Appropriations for FY2006: Energy and Water Development*, coordinated by Carl Behrens.

The House Appropriations Subcommittee on Energy and Water Development held a hearing on the Corps budget on March 3, 2005. The House Transportation and Infrastructure Subcommittee on Water Resources and the Environment held a Corps budget hearing on March 10, 2005. On April 7, 2005, the Senate Appropriations Subcommittee on Energy and Water Development held a Corps budget hearing.

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<sup>1</sup> (...continued)

million to such projects. This reinforced the general pattern since 1992 that the Administrations have generally been unsupportive of the Corps' involvement in environmental infrastructure, while Congress has provided authorizations and some appropriations for these activities.

**Authorizations and WRDA.** Congress generally authorizes new Corps projects in a Water Resources Development Act (WRDA), which typically is considered biennially.<sup>2</sup> For the most part, already authorized projects do not require reauthorization, so the bulk of WRDA bills consists of authorizations of new studies, construction projects, and modifications to already authorized activities. The last WRDA was enacted in 2000 (P.L. 106-541). S. 728, WRDA 2005, started the legislative consideration of WRDA by the 109<sup>th</sup> Congress. The primary issues shaping WRDA consideration in the 109<sup>th</sup> Congress are largely the same as in the 108<sup>th</sup> Congress: authorized spending (e.g., the amount of authorizations in the bill, and the bill's potential budgetary impact), change to Corps policies and practices (see "Project Development Reform," below), and authorization of a few projects — UMR-IWW, Everglades, and coastal Louisiana. One issue that is shaping S. 728 consideration in the Senate that was not an active part of the WRDA debate in the 108<sup>th</sup> Congress is a proposed reduction of the application of the Corps' regulatory responsibilities for navigable waters. For more information on WRDA action and the issues shaping in WRDA the 109<sup>th</sup> Congress, see CRS Issue Brief IB10133, *Water Resources Development Act (WRDA): Army Corps of Engineers Authorization Issues in the 109<sup>th</sup> Congress*, coordinated by Nicole T. Carter.

**Project Development Reform.** Support for changing the Corps' practices gained momentum in 2000 in the wake of a series of critical articles in the *Washington Post*, whistleblower allegations, and ensuing investigations. Many of the supporters of these changes, primarily environmental groups, sought to modify Corps project planning (e.g., by changing the cost-benefit analysis and consideration of environmental impacts and benefits) to require additional review of Corps projects (e.g., through external review of Corps feasibility reports), and to strengthen environmental protection (e.g., through modifications to fish and wildlife mitigation requirements); these kinds of changes often were referred to as "Corps reform." Although Corps reforms were discussed in the 106<sup>th</sup>, 107<sup>th</sup>, and 108<sup>th</sup> Congresses, no significant changes were enacted. Some Members of Congress, along with agriculture and navigation interests, were satisfied with existing practices. The Corps argues that it has transformed itself by changes it has implemented since 2000, and other changes that are nearing completion; these include refinements in planning, internal review (with the possibility of external review), and wetlands mitigation.<sup>3</sup>

The debate over changing the Corps has evolved. As shown by S. 753 (the Corps of Engineers Modernization and Improvement Act of 2005), some continue to support the Corps reform proposals that largely grew out of the exposure the Corps received in 2000. Others argue that any changes should move the agency in a different direction than the original measures pursued after the 2000 events. These stakeholders, like many nonfederal sponsors of Corps projects, want to increase the predictability of the Corps planning process, by making changes such as standardizing planning procedures, models, and data; limiting the length of studies; and requiring tracking of the agency's construction backlog. In other words, there are at least two views of how to change the Corps that derive from fundamentally divergent perspectives of what, if anything, is wrong with Corps' practices.

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<sup>2</sup> Appropriations bills have also been used as vehicles for authorizing projects.

<sup>3</sup> The Corps summarizes its efforts at [[http://www.usace.army.mil/inet/functions/cw/hot\\_topics/18apr\\_changes.htm](http://www.usace.army.mil/inet/functions/cw/hot_topics/18apr_changes.htm)], visited on June 8, 2005.

The provisions in S. 728 that change Corps practices draw elements from proposals supported by stakeholders with different views of how to improve the agency's projects; most changes proposed in prior WRDA bills and other legislation draw more heavily upon the Corps reform proposals that grew out of the concerns raised in 2000. Although some elements of S. 728 are similar to provisions negotiated during WRDA considerations in the 108<sup>th</sup> Congress, many elements of S. 728 are either new or significantly modified. For more information on the proposed changes to Corps practices in WRDA legislation, see CRS Report RS22129, "*Corps of Engineers Reform*" in WRDA 2005, by Nicole T. Carter.

**Agency Management.** The Corps recently reorganized under a restructuring plan called *USACE 2012*. The restructuring was designed to improve the agency's operational efficiency by integrating the regional and national perspective into the district teams responsible for project development. It also reorganized the Corps along business lines (e.g., navigation, flood control and coastal storm damage reduction, environment, emergency management, regulatory, etc.), rather than geographically.

The *USACE 2012* restructuring did not address the broader issues of the agency's future role in the Department of Defense and in relation to the changing national landscape of water resources (including water supply and municipal water and wastewater infrastructure) and environmental restoration. An overarching question about the future of the agency is whether it continues to plan, construct, operate and maintain facilities, or whether it specializes in one of these roles.

Although it does not respond to this question directly, the Corps released its *Civil Works Strategic Plan* in March 2004.<sup>4</sup> The plan outlines the goals and direction that the agency is defining for itself. It describes how the agency will use performance-based budgeting, business line management, and a watershed approach based on integrated water resources management concepts.

As requested by Congress, the Corps developed a comprehensive five-year budget plan for 2006 through 2010; H.Rept. 109-86 (accompanying H.R. 2419) was critical of the Corps' budget plan. In this report the House Appropriations Committee expressed a view of how to structure the Corps portfolio; it stated, "the Civil Works program needs to be managed as a program and not as a collection of individual projects" to respond to what the committee sees as "little or no systematic approach to the Nation's water and coastal infrastructure underlying the selection of which projects received funding."

**Ecosystem Restoration.** The Corps has been widely criticized for the environmental harm its water resources projects have caused to ecosystems. To address this criticism, the Corps has adopted environmental operating principles and expanded its professional development programs to support greater environmental protection in its project development processes. The Corps' environmental protection efforts in the last two decades have developed out of its reworking of existing projects to provide not only mitigation, but also ecosystem restoration. Ecosystem restoration is new for the Corps and remains a

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<sup>4</sup>The plan was available at [[http://www.usace.army.mil/civilworks/hot\\_topics/cw\\_strat.pdf](http://www.usace.army.mil/civilworks/hot_topics/cw_strat.pdf)], visited on June 8, 2005.

relatively young science; these factors contribute to risk and uncertainty on how to best undertake restoration, how to track progress, and what outcomes to anticipate.

**Everglades as a Test Case.** To date, the Corps' largest involvement in ecosystem restoration in the Florida Everglades, where the first increment of a three-decade, \$7.8 billion (50% federal/50% nonfederal) restoration program has begun. Congress approved the framework for the Comprehensive Everglades Restoration Plan (CERP) in WRDA 2000 (Title VI), and authorized an initial set of activities at a federal cost of \$0.7 billion. The principal objective of CERP is to redirect and store freshwater currently directed away from the Everglades to the ocean, and use it to restore the natural hydrologic functions of the south Florida ecosystem. The federal government is paying for half the cost of construction, operation, and maintenance performed under CERP; the other half is borne by the state of Florida, with local tribes and other nonfederal sponsors. The Corps with a state partner coordinates the strategies, policies, and plans for restoring the Everglades through task forces and other committees. In the 109<sup>th</sup> Congress, two projects have been proposed for authorization under the CERP framework — Indian River Lagoon-South wetlands and estuarine restoration and the Picayune Strand restoration. (For more information on these two projects, see CRS Issue Brief IB10133, *Water Resources Development Act (WRDA): Army Corps of Engineers Authorization Issues in the 109<sup>th</sup> Congress*, coordinated by Nicole T. Carter.)

**Corps' Role in Ecosystem Restoration.** Everglades restoration is seen by many as a groundbreaking, large-scale restoration effort that may provide lessons and possibly set precedents for other restoration projects. Consequently, its implementation and related congressional actions are closely watched.

Corps responsibilities in ecosystem restoration efforts are diverse. In the case of CERP, the Corps' role is multi-faceted. The Corps is the designated federal sponsor for several aspects of CERP, administering 50% of the cost of restoration (when it is the federal sponsor), constructing several of the restoration projects, and sharing in the responsibility of water management and distribution. In contrast, the Corps does not have a leadership role in restoring the San Francisco Bay-Sacramento/San Joaquin Rivers Delta (Bay-Delta or CALFED) in California. The Corps supports restoration in the Bay-Delta through flood control and water management projects and technical assistance with levee design and construction. (For more information, see CRS Issue Brief IB10019, *Western Water Resource Issues*, by Betsy A. Cody and Pervaze A. Sheikh.)

The growing role of the Corps in ecosystem restoration raises numerous questions, such as whether the Corps is the best agency to manage large-scale federal restoration projects and, more generally, how much the nation is willing to invest in restoration, and at what cost to flood protection and other traditional water uses. Ecosystem restoration could be applied in many places across the country, including coastal Louisiana, the Missouri River, and the Upper Mississippi River System. Many observers are watching current restoration efforts to see, among other things, how federal financial involvement proceeds, how restoration science and supporting technologies develop, how well adaptive management works, and ultimately how effective and costly restoration is.

**River Management.** An array of interests are questioning current river management practices across the nation and how management can balance benefits (and harm) across

multiple river uses, including in-stream uses. The Missouri River is a prime example of the complex management issues in which the Corps is embroiled. How the nation uses and values its rivers has changed over time. Rivers now are seen as providing not only economic benefits but also recreational opportunities and species habitat. These changes manifest themselves in law (e.g., National Environmental Policy Act [NEPA, P.L. 91-190; 42 U.S.C. §§4321-4347] and Endangered Species Act [ESA, P.L. 93-205, as amended; 16 U.S.C. §§1531-1540]) and in interpretation of water resources statutes. This shift has resulted in a reexamination by the courts, agencies, and stakeholders of the distribution of economic and other benefits of management alternatives. The Missouri River debate raises some fundamental questions about water resources management, such as whether some river uses should take priority over others (e.g., threatened and endangered species protection over inland waterway transportation, or vice versa) and how precedence should be decided (e.g., balancing competing uses vs. maximizing economic benefits).

**Missouri River Multiple Uses.** Drought in the Missouri River basin has contributed to an ongoing debate on the operation of the basin's federal dams. The controversy is drawn largely along state lines. Upper basin states, such as North and South Dakota, have strong lake recreational and water supply interests and generally prefer stable reservoir levels. Lower basin states, such as Missouri, want to maintain management that supports navigation, power generation, water supply, and river recreation and continues current structural approaches to flood control. The differences between the operational regimes supported by upper and lower basin states are exacerbated during drought. Threatened and endangered species protection further complicates river management.

The Missouri River Master Manual, which guides reservoir operations, was published on March 19, 2004, after a contentious 14-year revision process.<sup>5</sup> The operational changes set forth in the new manual are primarily drought conservation measures. The manual incorporates a process for developing a flow management plan by 2006; the process was set out as an option by the Fish and Wildlife Service in its 2003 Amended Biological Opinion. The Corps is using provisions in the 2003 Amended Biological Opinion that allows the low summer flow modification to be offset by the creation of shallow water habitat for the pallid sturgeon, one of three species in the Missouri River protected under the ESA.

**Missouri River Reservoir Conditions, Water Availability, and Navigation.** This is considered by some to be the sixth year of drought for the Missouri River basin. The system storage for the Missouri River dams at the end of 2004 was a record low, after falling below the 2003 record low. The Corps is working with some communities, including Native American communities, whose water supplies are threatened by the low lake levels.

According to the Corps' 2005 operating plan, "If the drought continues, reservoir pool levels and releases may continue to fall below their previous historic lows creating the potential for water supply problems at intakes, particularly those located on the upper three

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<sup>5</sup> The Master Manual, officially titled the *Missouri River Mainstem Reservoir System Master Water Control Manual*, was available at [<http://www.nwd-mr.usace.army.mil/rcc/reports/mmanual/MasterManual.pdf>], visited on June 8, 2005.

reservoirs.”<sup>6</sup> The Corps is predicting that the 2005 navigation season will be terminated 61 days early. The reservoir levels at the Missouri River dams are closing in on the minimum storage level allowed for providing any flows to support navigation; if reservoir conditions are below this minimum level on March 15, 2006, the Master Manual calls for the suspension of flows to support navigation, that is, a cancellation of the entire navigation season.

**Upper Mississippi River - Illinois Waterway (UMR-IWW) Multiple Uses.** The Upper Mississippi River and Illinois Waterway is at the center of a debate over the future of inland navigation, the restoration of rivers used for multiple purposes, and the reliability and completeness of the Corps analyses justifying investments. Consequently, authorization of investments in navigation and ecosystem restoration of the UMR-IWW is likely to play a prominent role in WRDA debates in the 109<sup>th</sup> Congress; among the topics debated are the urgency, necessity, and national benefit of expanded UMR-IWW navigation capacity and ecosystem restoration.

The UMR-IWW is a 1,200-mile, 9-foot-deep navigation channel created by 37 lock-and-dam sites and thousands of channel structures. The UMR-IWW makes commercial navigation possible between Minneapolis and St. Louis on the Mississippi River, and along the Illinois Waterway from Chicago to the Mississippi River. It permits upper midwestern states to benefit from low-cost barge transport. Since the 1980s, the system has experienced increasing traffic delays, purportedly reducing competitiveness of U.S. products in some global markets. The river is also losing the habitat diversity that allows it to support an unusually large number of species for a temperate river. This loss is partially attributable to changes in the distribution and movement of river water caused by navigation structures and operation of the 9-foot navigation channel.

**Upper Mississippi River - Illinois Waterway (UMR-IWW) Current Status.** On December 15, 2004, the Corps’ Chief of Engineers approved a UMR-IWW 50-year framework for navigation and ecosystem restoration investments, as laid out in a Corps final feasibility report. This framework consists of combined navigation investments (\$2.4 billion) and ecosystem restoration investments (\$5.3 billion), to be accomplished through incremental implementation. The Corps recommended authorization of a first increment of these investments using an adaptive implementation approach that would provide the Administration and Congress with new information when specified milestones were reached. S. 728 would authorize the first increment of these investments — \$2.03 billion (50% from the Inland Waterway Trust Fund, and 50% from federal general revenue) for seven new locks, small-scale navigation measures, and related environmental mitigation, and \$1.58 billion (estimated at 93% federal, and 7% nonfederal) for ecosystem restoration measures. Whether and how to link progress of ecosystem restoration measures and navigation improvements is also part of the UMR-IWW authorization discussion. For more information on the UMR-IWW authorization in WRDA, see CRS Issue Brief IB10133, *Water Resources Development Act (WRDA): Army Corps of Engineers Authorization Issues in the 109<sup>th</sup> Congress*, coordinated by Nicole T. Carter. For background information on UMR-IWW, see the CRS reports listed in “For Additional Reading.”

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<sup>6</sup> The 2004-2005 Missouri River Annual Operating Plan is available at [<http://www.nwd-mr.usace.army.mil/rcc/reports/pdfs/aopfinal2004-2005.pdf>], visited on June 8, 2005.

## LEGISLATION

### 109<sup>th</sup> Congress

#### **S. 728 (Bond)**

Water Resources Development Act of 2005. Ordered reported on April 13, 2005.

#### **S. 753 (Feingold)**

Corps of Engineers Modernization and Improvement Act of 2005. Introduced on April 11, 2005; and referred to the Committee on Environment and Public Works.

### 108<sup>th</sup> Congress

#### **P.L. 108-447, H.R. 4818**

Energy and Water Development Appropriations Act of FY2005. Division C, Title I, of the bill provides \$4.75 billion for the Corps' civil works mission.

#### **H.R. 2557 (Young)**

Water Resources Development Act of 2003. Passed House September 24, 2003; no further action was taken.

#### **S. 2773 (Inhofe)**

Water Resources Development Act of 2004. Original measure reported to Senate, and placed on Senate calendar on August 25, 2004; no further action was taken.

## FOR ADDITIONAL READING

### **Background**

CRS Report RS20866, *The Civil Works Program of the Army Corps of Engineers: A Primer*, by Nicole T. Carter and Betsy A. Cody.

CRS Report RS20569, *Water Resource Issues in the 109<sup>th</sup> Congress*, by Betsy A. Cody and H. Steven Hughes.

### **Budget and Appropriations**

CRS Report RL32307, *Appropriations for FY2005: Energy and Water Development*, coordinated by Carl Behrens.

CRS Report RL32852, *Appropriations for FY2006: Energy and Water Development*, coordinated by Carl Behrens.

CRS Report RL32064, *Army Corps of Engineers Water Resources Activities: Authorization and Appropriations*, by Nicole T. Carter and H. Steven Hughes.

**Authorizations and WRDA**

CRS Issue Brief IB10133, *Water Resources Development Act (WRDA): Army Corps of Engineers Authorization Issues in the 109<sup>th</sup> Congress*, coordinated by Nicole T. Carter.

CRS Report RL32915, *Upper Mississippi River-Illinois Waterway Investments: Legislation in the 109<sup>th</sup> Congress*, by Nicole T. Carter and Kyna Powers.

**Project Development Reform**

CRS Report RS22129, “*Corps of Engineers Reform*” in WRDA 2005, by Nicole T. Carter.

National Research Council, *New Directions in Water Resources: Planning for the U.S. Army Corps of Engineers* (Washington, DC: National Academy Press, 1999).

—*Adaptive Management for Water Resources Planning* (2004).

—*Analytic Methods and Approaches for Water Resources Project Planning* (2004).

—*River Basins and Coastal Systems Planning Within the U.S. Army Corps of Engineers* (2004).

—*U.S. Army Corps of Engineers Water Resources Planning: A New Opportunity for Service* (2004).

**Ecosystem Restoration**

CRS Issue Brief IB10019, *Western Water Resources Issues*, by Betsy A. Cody and Pervaze A. Sheikh.

CRS Report RS20702, *South Florida Ecosystem Restoration and the Comprehensive Everglades Restoration Plan*, by Pervaze A. Sheikh and Nicole T. Carter.

CRS Report RL32673, *Coastal Louisiana: Attempting to Restore an Ecosystem*, by Jeffrey Zinn.

**River Management**

CRS Report RL32470, *Upper Mississippi River-Illinois Waterway Navigation Expansion: An Agricultural, Transportation, and Environmental Decision*, coordinated by Randy Schnepf.

CRS Report RL32630, *Upper Mississippi River System: Proposals to Restore an Inland Waterways Ecosystem*, by Kyna Powers and Nicole T. Carter.

National Research Council, *River Basins and Coastal Systems Planning Within the U.S. Army Corps of Engineers* (Washington, DC: National Academy Press, 2004).

National Research Council, *The Missouri River Ecosystem: Exploring the Prospects for Recovery* (Washington, DC: National Academy Press, 2002).

U.S. Army Corps of Engineers, *Missouri River Mainstem Reservoir System Master Water Control Manual* (Omaha, NE: Northwestern Division, 2004), available at

[<http://www.nwd-mr.usace.army.mil/rcc/reports/mmanual/MasterManual.pdf>], visited on June 8, 2005.

U.S. Dept. of the Interior, Fish and Wildlife Service, *2003 Amendment to the 2000 Biological Opinion* (Dec. 2003). Available at [<http://www.fws.gov/pdfs/FinalBO.pdf>], visited on June 8, 2005.